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Oz. Av.

The following muscles are found in the palm:—

31. *Short flexors of the outer finger,* . . . . 5·5

	Oz.Av.
a, ...	2·5
b, ...	3·0
	5·5

a. Origin; from the ligament already described (22) joining the pisiform and sesamoid of outer finger, from one carpal bone, and from the inner side of the shaft of the metacarpal of the outer finger.

Inserted into the base of the first phalanx of the outer finger.

b. Consists of two muscles, arising from the inner half of the metacarpal of the outer finger, and from the carpal bone of the middle finger, and inserted into the inner side of the first phalanx of the outer finger.

32. *Short flexors of the inner finger,* . . . . 5·0

These are two in number, and similar to those of the outer finger.

33. *Short flexors of the middle finger,* . . . . 2·0

These are two in number.

The Rev. Samuel Haughton, M. D., Fellow of Trinity College, Dublin, read the following paper:—

Notes on Animal Mechanics.

XVII.—On the Comparative Myology of certain Birds.

In order to compare the muscles of different classes of birds, I dissected two Tiercel Peregrines, a Falcon Peregrine, a Cara Cara Hawk, a Demoiselle Crane, and a Canadian Goose.

The Cara Cara Hawk (*Polybarus*, or *Falco Braziliensis*) presents a most striking resemblance to the Peregrine Hawk, and, judging from his muscular anatomy, must be regarded as a Hawk, and not a Vulture.

A.—*Muscles of the Leg.*

	Tiercel.	Falcon.	Cara.	Crane.	Goose.
	Oz.	Oz.	Oz.	Oz.	Oz.
1. *Sartorius*,[a] . . .	0·05	0·08	0·05	0·11	0·57
2. *Adductores*,[b] . .	0·04	0·05	0·09	0·18	0·40

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[a] The *Sartorius* takes its origin from the anterior curved edge of the ilium, and is inserted by a broad tendon into the side of the knee joint and tibia.

[b] In the Peregrine and Cara there was only one *adductor;* in the Crane and Goose there were two, viz.—

	Crane.	Goose.
	Oz.	Oz.
Adductor magnus, . .	0·12	0·23
Adductor longus, . . .	0·06	0·17
	0·18	0·40

	Tiercel.	Falcon.	Cara.	Crane.	Goose.
	Oz.	Oz.	Oz.	Oz.	Oz.
3. *Obturator externus*,	0·03	0·03	0·04	0·04	0·12
4. *Obtur. internus*, &c.,	0·02	0·02	0·03	0·02	—
5. *Gubernator caudæ*,[c]	0·02	0·02	0·02	—	0·20
6. *Glutæus maximus*,[d]	0·01	0·01	0·01	0·09	1·07
7. *Glutæus medius*,[e]	0·04	0·04	0·10	0·17	0·78
8. *Glutæus minimus et Gl. quartus*,[f]	0·04	0·03	0·03	0·04	0·73
9. *Tensor vaginæ femoris*,[g]	0·07	0·03	0·07	—	0·52
10. *Biceps femoris*,[h]	0·08	0·08	0·10	0·16	0·72
11. *Semimembranosus*,[i]	0·02	0·02	0,05	0·09	0·17
12. *Semitendinosus*,[i]	0·03	0·03	0·05	0·07	0·07
13. *Gracilis*,[k]	0·04	0·03	0·05	—	0·11
14. *Rectus femoris*,[l]	—	—	—	—	—
15. *Vastus externus et Vastus internus*,	0·13	0·11	0·13 0·03	0·30	0·85

		Crane.	Cara.
		Oz.	Oz.
16. *Gastrocnemido-solæus*,		0·31	0·18
α. Outer head,	0·09		(Four heads).
β. Middle head,	0·06		
γ. Inner head,	0·16		
	0·31		
17. *Plantaris*,		0·01	—
18. *Tibialis anticus*,		—	0·14

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[c] This muscle is quite distinct from the *agitator caudæ*, and lies in a plane below it. In the Falcon and Cara it takes origin from the transverse process of the large terminal caudal vertebra (*ploughshare*), and is inserted into the second fifth from the top of the linea aspera by means of a flat tendon; in the Goose it is inserted into the middle of the lower part of the *glutæus medius*; and in the Duck into the outer head of the fibula.

[d] The *glutæus maximus* in the Falcon and Cara takes its origin from the edge of the ilium, in a plane below that of the *ten. vag. fem.*, for one-fourth of an inch in front of the acetabulum, and has the usual insertion; in the Crane its origin is from the post-acetabular edge of the ilium, and it is inserted by a broad tendon into the middle of the *vastus externus* and fascia of the outer side of the thigh; and in the Goose it is inserted into the fascia of the inner side of the knee.

[e] The *gl. medius* has the usual insertion in the Falcon, Cara, and Crane; but in the Goose and Duck it is inserted into the middle of the *linea aspera*.

[f] Quite separate in the Crane; *gl. min.* = 0·01, *gl. quartus* = 0·03.

[g] This small muscle, in conjunction with the *sartorius*, in most birds serves instead of a *rectus femoris*.

[h] The *biceps femoris* in the Falcon, Cara, and Crane, passes through the usual tendinous pulley at the outer side of the lower end of the femur, and outer head of the *gastrocnemius*; in the Goose and Duck it is inserted into the tibia, at the inner side of the knee.

[i] These muscles in the Falcon and Cara are inserted by flat tendons into the tibia; and in the Crane they are also inserted into the upper tendinous portion of the inner head of the *gastrocnemius*.

[k] This muscle, in the Falcon and Cara, takes origin from three-fourths of the length of the pubis behind the acetabular prominence of that bone.

[l] There is a *rectus femoris* in the Falcon and Cara, arising from the ilium, in front of the acetabular prominence of the pubis; it is a fine delicate muscle, weighing 0·01 oz. in the Cara, and its tendon passes obliquely across the front of the knee joint from within outwards, and, winding down into the calf, forms one head of the *first perforate flexor of the second toe*, the muscular portion of which is connected by muscular slips with the *first perforate flexors* of the third and fourth toes, and with the *second perforate flexor* of the third toe. The weight of the *first perforate flexor* of the second or index toe in the Cara, was 0·02.

This muscle is thus described by Cuvier:—

"Il y a dans le lieu qu'occupe le pectineux des quadrupedes, un petit muscle grêle, qui se prolonge jusqu'au genou. Son tendon passe obliquement pardessus, et se glisse derriere la jambe pour s'unir au fléchisseur perforé du second et du cinquième doigt."*

Professor Owen† regards this muscle as the *gracilis*; while he considers as *rectus femoris* the muscle already described as *tensor vaginæ femoris*.

* "Lecons d'Anatomie comparée," tom. i., p. 359.
† "Cyclopædia of Anatomy," vol. i., p. 296.

B.—*Muscles of the Wing.*

	TIERCEL. Oz.	FALCON. Oz.	CARA. Oz.	CRANE. Oz.
1. *Serratus magnus*,	0·04	0·06	0·05	—
2. *Rhomboideus*,	0·02	0·03	0·07	—
3. *Teres major*,[m]	0·02	0·02	0·02	—
4. *Latissimus dorsi*,	0·03	0·03	0·04	—
5. *Subscapularis*,	0·04	0·04	0·04	—
6. *Pectoralis minor*,	0·05	0·05	0·04	0·06
7. *Pectoralis major*,[n]	0·73	0·76	1·03	2·00
8. *Pectoralis secundus avium*,	0·08	0·11	0·10	0·37
9. Wingfolder (*extensor plicæ alaris*),[o]	0·03	0·04	0·04	—
10. *Coracobrachialis*,	0·03	0·03	0·02	—
11. *Deltoideus internus* (*clavicularis*),[p]	0·03	0·02	0·02	—
12. *Deltoideus externus* (*scapularis*),[q]	0·09	0·08	0·12	—
13. *Supra et infra spinatus*,[r]	0·09	0·07	0·10	—
14. *Biceps humeri*,	0·05	0·04	0·06	—
15. *Triceps humeri*,	0·11	0·14	0·15	—

The Rev. SAMUEL HAUGHTON, M. D., Fellow of Trinity College, Dublin, read the following paper:—

NOTES ON ANIMAL MECHANICS.

XVIII.—ON THE COMPARATIVE MYOLOGY OF CERTAIN RUMINANTS.

IN the following comparisons of the muscles of Ruminants I have made the Indian Goat the standard; the other animals examined being the Virginian Deer, the Nylghau, and Napu Deer of Java.

A.—*Muscles of the Hind Limb.*

	GOAT. Oz.	DEER. Oz.	NAPU. Oz.
1. *Sartorius*,[a]	0·11	1·25	0·13
2. *Tensor vag. femoris*,	0·42	4·25	
3. *Psoas magnus*,	0·97	7·50	0·37
4. *Iliacus*,	0·26	2·50	0·05
[*Psoas parvus*],	0·15	1·75	0·04
5. *Pectinæus*,	—	2·25	0·03

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[m] The *teres major* arises from the spinous processes of the lower dorsal vertebræ, and crosses the lower extremity of the scapula, to be inserted by a flat tendon into its usual place in the humerus.

[n] A slip from the upper edge of this muscle joins the wingfolder (*extensor plicæ alaris* Carus).

[o] This muscle takes its origin from the acromion, and is inserted into the wrist, acting directly as a folder of the wing.

[p] Arises from the tip of the acromion, and is inserted into the top of the humerus, inside the pectoral ridge.

[q] Origin, from the portion of the scapula adjoining the acromion; insertion into the outer side of the pectoral ridge of the humerus; rotates the arm powerfully outwards.

[r] Arise from the lower two-thirds of the outer side of the scapula.

[a] The *sartorius* in the Goat has a double origin—

a. From the anterior edge of the pubis, close to the acetabulum.
b. From the anterior superior crest of the ilium, by fascia.